WHAT IS CLAIMED IS:

1. A power consumption reducing apparatus comprising:

a periodic active state conversion unit which, in each awake period, converts an inactive state into an active state, wherein power consumption is greater in the active state than in the inactive state;

a beacon frame reception unit which, in an active state converted by the period active state conversion unit, receives a beacon frame;

an awake window setting unit which, when the beacon frame reception unit receives the beacon frame, and if an interval value of an awake window, in which the active state is maintained for a predetermined time, among field values of the received beacon frame is valid, sets the awake window;

an awake window interval counting unit which counts, in a counting, the interval value in the awake window set by the awake window setting unit; and

an inactive state conversion unit which, if the awake window counting unit finishes the counting, converts the awake window into an inactive state.

2. The apparatus of claim 1, wherein if the beacon frame reception unit does not receive the beacon frame within a predetermined time, or if the beacon frame is received within the predetermined time and a length value of the awake window contained in the received beacon frame is not

valid, the awake window setting unit converts the active state into the inactive state.

3. The apparatus of claim 1, wherein the awake window counting unit counts by repeatedly subtracting a predetermined unit value from the interval value of the awake window in each counting period.

4. The apparatus of claim 1, wherein the active state is a state where a full power is provided and the inactive state is a state where a minimum power needed for conversion into the active state is provided.

5. The apparatus of claim 1, further comprising:

a data frame transmission and reception unit which transmits and receives a predetermined data frame in the awake window set by the awake window setting unit.

6. The apparatus of claim 5, wherein the power consumption reducing apparatus is an apparatus of a first station on a predetermined wireless ad-hoc network.

7. The apparatus of claim 6, wherein in each awake period, the beacon frame is transmitted through a predetermined channel to all stations, except a station having transmitted the beacon frame, on the wireless ad-hoc network.

8. The apparatus of claim 7, wherein the data frame transmission and reception unit comprises:

a data frame transmission unit which, when a right to exclusively use a channel is obtained through a contention for a channel use, transmits a first data frame among data frames to all stations except the first station on the wireless ad-hoc network through the channel; and

an acknowledgment frame reception unit which, when a second station, which has received the beacon frame and is in the awake window, receives the first data frame through the channel, receives an acknowledgment frame through the channel from the second station of the first data frame transmitted by the data frame transmission unit.

9. The apparatus of claim 8, wherein the data frame transmission unit transmits the first data frame in a broadcast method.

10. The apparatus of claim 8, wherein when the data frame transmission unit does not obtain the right to exclusively use the channel, or if

the acknowledgment frame reception unit does not receive the acknowledgment frame, the data frame transmission unit tries to obtain the right to exclusively use the channel through another contention for the channel use in another awake window set after the awake window, and if the right is obtained, transmits again the first data frame among the data frames to all the stations except the first station on the wireless ad-hoc network through the channel.

11. The apparatus of claim 8, wherein when the awake window counting unit does not finish the counting, and if the data frame transmission unit does not obtain the right to exclusively use the channel, or if the acknowledgment frame reception unit receives the acknowledgment frame, the inactive state conversion unit converts the awake window into the inactive state.

12. The apparatus of claim 8, wherein if the data frame transmission unit does not finish transmission of the first data immediately before the awake window counting unit finishes the counting, the inactive state conversion unit increases the interval value by a predetermined value.

13. The apparatus of claim 7, wherein the data frame transmission and reception unit comprises:

a data frame reception unit which receives a second data frame among the data frames through the channel from a third station, which receives a beacon frame, is in the awake window, and has obtained the right to use the channel; and

an acknowledgment frame transmission unit which, when the data frame reception unit receives the second data frame and a destination field of the second data indicates the first station, and if the right to exclusively use the channel is obtained through a contention for the channel use, transmits an acknowledgment frame of the second data frame from the third station through the channel.

14. The apparatus of claim 13, wherein if the acknowledgment frame transmission unit does not obtain the right to exclusively use the channel, the acknowledgment frame transmission unit tries to obtain the right to use the channel through another contention for the channel use in another awake window set after the awake window, and if the right is obtained, transmits again the acknowledgment frame to the third station through the channel.

15. The apparatus of claim 13, wherein when the awake window counting unit does not finish the counting, and if the data frame reception unit does not receive the second data frame or if the second data frame is received and the destination field of the second data frame does not indicate the first station, or if the acknowledgment frame transmission unit does not obtain the right to exclusively use the channel, or if the acknowledgment frame is transmitted, the inactive state conversion unit converts the awake window into the inactive state.

16. The apparatus of claim 13, wherein if the data frame reception unit does not finish reception of the second data immediately before the awake window counting unit finishes the counting, the inactive state conversion unit increases the interval value by a predetermined value.

17. A power consumption reducing method comprising:

(a) converting in each awake period, an inactive state into an active state as a converted active state, wherein power consumption is greater in the active state than in the inactive state;

(b) receiving, in the converted active state, a beacon frame as a received beacon frame;

(c) when the beacon frame is received in the step (b), and if an interval value of an awake window, in which the active state is maintained for a

predetermined time, among field values of the received beacon frame is valid, setting the awake window as a set awake window;

(d1) counting the interval value in the set awake window; and

(e) if the counting is finished in the step (d1), converting the awake window into the inactive state.

18. The method of claim 17, wherein in the step (c) if the beacon frame is not received in the step (a) within a predetermined time, or if the beacon frame is received within the predetermined time and a length value of the awake window contained in the received beacon frame is not valid, the active state is converted into the inactive state.

19. The method of claim 17, wherein in the step (d1) counting is performed by repeatedly subtracting a predetermined unit value from the interval value of the awake window in each counting period.

20. The method of claim 17, wherein the active state is a state where a full power is provided and the inactive state is a state where a minimum power needed for conversion into the active state is provided.

21. The method of claim 17, further comprising:

(d2) transmitting and receiving a predetermined data frame in the awake window set in the step (c).

22. The method of claim 21, wherein the power consumption reducing method is a method used in a first station on a predetermined wireless ad-hoc network.

23. The method of claim 22, wherein in each awake period, the beacon frame is transmitted through a predetermined channel to all stations, except a station having transmitted the beacon frame, on the wireless ad-hoc network.

24. The method of claim 23, wherein the step (d2) comprises:

(d21) transmitting when a right to exclusively use the channel is obtained through a contention for the channel use, a first data frame among data frames to all stations except the first station on the wireless ad-hoc network through the channel; and

(d22) receiving when a second station, which has received the beacon frame and is in the awake window, receives the first data frame through the channel, an acknowledgment frame through the channel from the second station of the first data frame transmitted by the data frame transmission unit.

25. The method of claim 24, wherein in the step (d21) the first data frame is transmitted in a broadcast method.

26. The method of claim 24, wherein when the right to exclusively use the channel is not obtained in the step (d21), or if the acknowledgment frame is not received in the step (d22), in the step (d21) if the right to exclusively use the channel is obtained through another contention for the channel use in another awake window set after the awake window, the first data frame among the data frames is transmitted again to all the stations except the first station on the wireless ad-hoc network through the channel.

27. The method of claim 24, wherein in the step (e), when the counting is not finished in the step (d1) and if the right to exclusively use the channel is not obtained in the step (d21), or if the acknowledgment frame is received in the step (d22), the awake window is converted into the inactive state.

28. The method of claim 24, wherein in the step (e), if transmission of the first data is not finished in the step (d21) immediately before the counting is finished, the interval value is increased by a predetermined value.

29. The method of claim 23, wherein the step (d2) comprises:

(d21) receiving a second data frame among the data frames through the channel from a third station, which receives a beacon frame, is in the awake window, and has obtained the right to use the channel; and

(d22) transmitting when the second data frame is received in the step (d21) and a destination field of the second data indicates the first station, and if the right to exclusively use the channel is obtained through a contention for the channel use, an acknowledgment frame of the second data frame from the third station through the channel.

30. The method of claim 29, wherein if the right to exclusively use the channel is not obtained, in the step (d22), and if the right to use the channel is obtained through another contention for the channel use in another awake window set after the awake window, the acknowledgment frame is transmitted again to the third station through the channel.

31. The method of claim 29, wherein in the step (e), when the counting is not finished in the step (d1), and if the second data frame is not received in the step (d21) or if the second data frame is received and the destination field of the second data frame does not indicate the first station, or

if the right to exclusively use the channel is not obtained in the step (d22), or if the acknowledgment frame is transmitted, the awake window is converted into the inactive state.

32. The method of claim 29, wherein in the step (e), if reception of the second data is not finished immediately before the counting is finished, the interval value is increased by a predetermined value.

33. A computer readable medium having embodied thereon a computer program for enabling a computer to provide a service of reducing power consumption, the service comprising:

(a) converting in each awake period, an inactive state into an active state as a converted active state, wherein power consumption is greater in the active state than in the inactive state;

(b) receiving, in the converted active state, a beacon frame as a received beacon frame;

(c) when the beacon frame is received in the step (b), and if an interval value of an awake window, in which the active state is maintained for a predetermined time, among field values of the received beacon frame is valid, setting the awake window as a set awake window;

(d1) counting the interval value in the set awake window; and

(e) if the counting is finished in the step (d1), converting the awake window into the inactive state.

34. The computer readable medium of claim 33, wherein in the step (c) if the beacon frame is not received in the step (a) within a predetermined time, or if the beacon frame is received within the predetermined time and a length value of the awake window contained in the received beacon frame is not valid, the active state is converted into the inactive state.

35. The computer readable medium of claim 33, wherein in the step (d1) counting is performed by repeatedly subtracting a predetermined unit value from the interval value of the awake window in each counting period.

36. The computer readable medium of claim 33, wherein the active state is a state where a full power is provided and the inactive state is a state where a minimum power needed for conversion into the active state is provided.

37. The computer readable medium of claim 33, further comprising:

(d2) transmitting and receiving a predetermined data frame in the awake window set in the step (c).

38. The computer readable medium of claim 37, wherein the power consumption reducing method is a method used in a first station on a predetermined wireless ad-hoc network.

39. The computer readable medium of claim 38, wherein in each awake period, the beacon frame is transmitted through a predetermined channel to all stations, except a station having transmitted the beacon frame, on the wireless ad-hoc network.

40. The computer readable medium of claim 39, wherein the step (d2) comprises:

(d21) transmitting when a right to exclusively use the channel is obtained through a contention for the channel use, a first data frame among data frames to all stations except the first station on the wireless ad-hoc network through the channel; and

(d22) receiving when a second station, which has received the beacon frame and is in the awake window, receives the first data frame through the

channel, an acknowledgment frame through the channel from the second station of the first data frame transmitted by the data frame transmission unit.

41. The computer readable medium of claim 40, wherein in the step (d21) the first data frame is transmitted in a broadcast method.

42. The computer readable medium of claim 40, wherein when the right to exclusively use the channel is not obtained in the step (d21), or if the acknowledgment frame is not received in the step (d22), in the step (d21) if the right to exclusively use the channel is obtained through another contention for the channel use in another awake window set after the awake window, the first data frame among the data frames is transmitted again to all the stations except the first station on the wireless ad-hoc network through the channel.

43. The computer readable medium of claim 40, wherein in the step (e), when the counting is not finished in the step (d1) and if the right to exclusively use the channel is not obtained in the step (d21), or if the acknowledgment frame is received in the step (d22), the awake window is converted into the inactive state.

44. The computer readable medium of claim 40, wherein in the step (e), if transmission of the first data is not finished in the step (d21) immediately before the counting is finished, the interval value is increased by a predetermined value.

45. The computer readable medium of claim 39, wherein the step (d2) comprises:

(d21) receiving a second data frame among the data frames through the channel from a third station, which receives a beacon frame, is in the awake window, and has obtained the right to use the channel; and

(d22) transmitting when the second data frame is received in the step (d21) and a destination field of the second data indicates the first station, and if the right to exclusively use the channel is obtained through a contention for the channel use, an acknowledgment frame of the second data frame from the third station through the channel.

46. The computer readable medium of claim 45, wherein if the right to exclusively use the channel is not obtained, in the step (d22), and if the right to use the channel is obtained through another contention for the channel use in another awake window set after the awake window, the

acknowledgment frame is transmitted again to the third station through the channel.

47. The computer readable medium of claim 45, wherein in the step (e), when the counting is not finished in the step (d1), and if the second data frame is not received in the step (d21) or if the second data frame is received and the destination field of the second data frame does not indicate the first station, or if the right to exclusively use the channel is not obtained in the step (d22), or if the acknowledgment frame is transmitted, the awake window is converted into the inactive state.

48. The computer readable medium of claim 45, wherein in the step (e), if reception of the second data is not finished immediately before the counting is finished, the interval value is increased by a predetermined value.